

CLAIMS

What is claimed is:

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1. An animated toy system comprising:
a toy figure having a body portion and at least one movable portion;
a loudspeaker situated within the body;
an actuator situated within the toy for moving the movable portion in response to the
toy receiving a digital data signal;

means for transmitting to the loudspeaker and the data signal to the actuator; and
a multimedia home computer including,

a sound subsystem for generating a sound signal representing spoken words
for transmission to the loudspeaker over the means for transmitting,

memory for storing an array of digital control codes representing movement
of the actuator for movement of the movable portion,

a data interface for generating, based on the digital control codes, the digital
data signals for transmission over the means for transmitting, and

means for causing sequential transmission of the digital data signals from the
data interface according to a predetermined synchronization with the transmission of
the sound signal by the sound card.

2. The system of Claim 1 wherein the at least one movable portion includes a
mouth and the drive control codes represent movement of the mouth in synchronization with
transmission of the sound signal to simulate speaking.

3. The system of Claim 1 wherein the multimedia home computer further
includes means for deriving the array of digital control codes from a text file and the sound
card includes a speech synthesizer for synthesizing a sound signal representing the words in
the text file from the text file.

4. The system of Claim 3 further including a sound dictionary file stored on the
computer and wherein the speech synthesizer looks up a sound signal for the textual words
in the sound dictionary.

5. The system of Claim 4 wherein sound dictionary file includes predetermined
digital control codes for each word and the home computer includes means for constructing
the array from the digital control codes in the dictionary file.

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9. The system of Claim 1 wherein the sound subsystem further includes means for recording spoken words and the computer includes means for recognizing the spoken

10. The system of Claim 9 wherein,
the means for recognizing the spoken words generates a text file,
the multimedia home computer further includes means for deriving the array of

11. The system of Claim 1 wherein the toy includes a second actuator for moving the second, articulating member, and the digital control code array includes a second memory location for storing digital control codes for the second actuator.

12. The system of Claim 1 wherein the computer includes a monitor and means playing animation on the monitor in coordination with talking of the toy.

13. The system of Claim 1 wherein the means for transmitting includes a cable on one end a first plug for connecting with a first electronic circuit forming part of the subsystem and a second plug for connecting with a second electronic circuit forming part of the toy, the cable having an input/output port, and connecting at the opposite end with the toy.

14. An animated talking toy system comprising:

a toy figure having a body and a moveable mouth;

a loudspeaker situated within the body;

an actuator having only two-phases for moving the mouth in first direction in

5 response to receiving a first binary digital data signal representing a first predefined binary value and in second direction in response to receiving a second binary digital data signal representing a second binary value;

means for transmitting a sound signal to the loudspeaker and the first and second binary digital data signals to the actuator; and

10 a multimedia home computer including,

a sound card for generating a sound signal representing spoken words for transmission to the loudspeaker over the means for transmitting,

memory for storing an array of binary digital control codes representing movement of the actuator for articulation of the mouth to simulate speaking,

a data interface for generating based on the array a sequence of first and second binary digital data signals for transmission to the actuator over the means for transmitting, and

means for causing sequential transmission of the first and second binary digital data signals according to a predetermined synchronization with transmission of the sound signal by the sound subsystem.

15. The system of Claim 14 wherein the actuator includes a switch operable by the binary digital data signal for switching current to a solenoid for causing movement of an element in response thereto for moving the mouth.

16. The system of Claim 15 wherein the element of the solenoid is coupled by a string to a pivoting portion of the mouth for applying torque to rotate the pivoting portion in a first direction against a biasing force applied by a spring to the pivoting portion in an opposite direction.

17. The system of Claim 14 wherein the multimedia home computer further includes means for deriving the array of binary digital codes from a text file and the sound card includes a speech synthesizer for synthesizing a sound signal representing the spoken words in the text file from the text file.

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18. The system of Claim 14 further including a sound dictionary file stored on the computer and wherein the speech synthesizer looks up a sound signal for the textual words in the sound dictionary.

19. The system of Claim 18 wherein sound dictionary file includes predetermined digital control codes and the home computer includes means for creating the array of digital control codes.

20. The system of Claim 14 wherein the sound subsystem further includes means for recording spoken words and the computer includes means for recognizing the spoken words.

21. The system of Claim 20 wherein,
the means for recognizing the spoken words generates a text file,
the multimedia home computer further includes means for deriving the array of binary digital codes from the text file, and
the sound card includes a speech synthesizer for synthesizing a sound signal representing the spoken words in the text file from the text file.

22. The system of Claim 14 wherein the toy includes a second actuator for moving a second, articulating member, and the digital control code array includes a second dimension for storing digital control codes for the second actuator.

23. The system of Claim 14 wherein the computer includes a monitor and means for displaying animation on the monitor in coordination with animation of the toy.

24. The system of Claim 14 wherein the means for transmitting includes a cable having on one end a first plug for connecting with a first electronic circuit forming part of the sound subsystem and a second plug for connecting with a second electronic circuit forming the input/output port.

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a loudspeaker situated within the body;

an elongated cable extending from toy for receiving an audio signal for the loudspeaker and a binary digital control signal to be used as a logic input for a switch for connecting power to drive the actuator.

27. The system of Claim 25 wherein the element of the solenoid is coupled by a string to a pivoting portion of the mouth for applying torque to rotate the pivoting portion in a first direction and wherein the actuator further includes a spring for applying a biasing force to the pivoting portion in an opposite direction to the force applied by the string.

28. The system of Claim 25 wherein the figure further includes a moving arm and a second actuator having only two-phases for moving the arm, the actuator moving the arm in first direction in response to receiving a third binary digital data signal representing of the first binary value and in the an opposite direction in response to receiving the fourth binary digital representing the second binary value.

29. A storage media storing instructions for a computer having a sound subsystem and a data interface to perform a method, the method including:
storing a digital sound file representing one or more spoken word sounds;
storing in a first array a sequence of binary digital values having a predetermined
5 timed relationship to the digital sound file;
transmitting from an external terminal on the sound subsystem a sound signal for a loudspeaker based on the digital sound file; and
sequentially transmitting from the data interface a sequence of digital signals corresponding to the sequence of binary digital values stored in the first array with the transmission of the sound signal according to the predetermined timed relationship.

30. The storage media storing instructions of Claim 29 wherein the method further includes deriving the sequence of binary digital values from a text file of words which are spoken in the digital sound file according to a predetermined rule.

31. The storage media storing instructions of Claim 30 wherein each binary digital value stored in the array represents one of a plurality of predefined positions of a mouth of a toy figure simulating speaking the word sounds in the digital sound file.

32. The storage media storing instructions of Claim 31 wherein deriving the sequence of binary digital values is determined based on the position of vowels in the words.

33. The storage media of Claim 29 wherein the method further comprises synthesizing the digital sound file from a text file by utilizing a dictionary file containing digital sounds for each word in the text.

34. The storage media of Claim 33 wherein the method further includes building the array from the text file by reading from the dictionary, for each word in the text file, a predefined sequence of binary digital values and storing the sequence in the array.

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